WHAT IS CLAIMED IS:

1. A method in a computer system for automatically controlling tilt of a cutting head of a fluid-jet apparatus relative to a material being cut to produce a target piece having an overall geometry, comprising:

segmenting the overall geometry into small straight lines of approximately equal length;

receiving a speed for each of the small straight lines of the overall geometry, wherein at least two small straight lines are associated with different speeds;

automatically determining a tilt parameter for each small straight line in accordance with the speed for that small straight line; and

automatically controlling the motion of the cutting head in accordance with the automatically determined tilt parameter to cut the material to produce the target piece.

2. The method of claim 1, wherein each small straight line has a length less than 0.10 inch.

3. The method of claim 1, wherein each small straight line has a length less than 0.005 inch.

4. The method of claim 1, wherein each small straight line has a length less than 0.001 inch.

5. The method of claim 1, wherein the tilt parameter for each small straight line is also determined in accordance with at least one process parameter.

6. The method of claim 5, wherein the process parameter is selected from a group consisting of material machinability, workpiece thickness, water pressure, fluid-jet forming orifice internal diameter, mixing tube internal diameter, mixing tube wear, abrasive material type, abrasive material size, abrasive material flow rate, stand-off distance, and quality index.

7. A computerized method for determining a tilt parameter for a cutting head of a fluid-jet apparatus relative to a plane of a workpiece, comprising:

receiving a target piece shape;

describing an ordered path defining the target piece shape;

segmenting the path into small straight lines of approximately equal length;

determining a cutting-head translation speed relative to the workpiece for each of the small straight lines; and

determining a tilt parameter for the cutting head with respect to the plane of the workpiece in response to the speed and a fluid jet-shape parameter for each of the small straight lines.

8. The method of claim 7 further comprising storing the small straight lines and the determined tilt parameter associated with each small straight line in a memory and sending the stored data to the fluid-jet apparatus.

9. The method of claim 7, wherein the small straight lines each have a length less than 0.10 inch.

10. The method of claim 7, wherein the receiving step further includes receiving a desired quality of result for at least a portion of the workpiece shape, and the determining the cutting-head translation speed step further includes determining the speed in response to the desired quality of result.

11. The method of claim 7, wherein the ordered path is described by lines and arcs.

12. The method of claim 7, wherein the cutting-head translation speed is further determined in response to at least one process parameter.

13. The method of claim 7, wherein the fluid jet-shape parameter is determined from values in a look-up table.

14. The method of claim 7, wherein the fluid jet-shape parameter is computed by a mathematical function.

15. The method of claim 7, wherein the fluid jet-shape parameter determination includes a factor responsive to cutting-head translation speed.

16. The method of claim 8, wherein the fluid jet-shape parameter further includes at least one of a process parameter and a characteristic of the workpiece material.

17. The method of claim 7, wherein the tilt parameter specifies a tilt that offsets a jet-taper error.

18. The method of claim 7, wherein the tilt parameter specifies a tilt that offsets a jet-lag error.

19. The method of claim 18, further including the step of controlling the tilt of the cutting head in accordance with the tilt parameter for each small straight line as the cutting head cuts the workpiece.

20. A computer–readable medium having computer-executable instructions for automatically controlling a tilt of a cutting head of a fluid-jet apparatus relative to a material being cut to produce a target piece having an overall geometry, the instructions for performing steps comprising:

segmenting the overall geometry into small straight lines of approximately equal length;

receiving a speed for each of the small straight lines of the overall geometry, wherein at least two small straight lines are associated with different speeds;

automatically determining a tilt parameter for each small straight line in accordance with the speed for that small straight line; and

automatically controlling the motion of the cutting head in accordance with the automatically determined tilt parameter to cut the material to produce the target piece.

21. A computer–readable medium having computer-executable instructions for performing steps comprising:

receiving a target-piece shape to be cut by a cutting head of a fluid-jet apparatus from a workpiece;

describing an ordered path defining the target piece shape;

segmenting the path into small straight lines of equal length;

determining a cutting-head translation speed relative to the workpiece for each of the small straight lines; and

determining a tilt parameter of the cutting head with respect to the plane of the workpiece in response to the speed and a fluid jet-shape parameter for each of the small straight lines.

22. The computer-readable medium of claim21, further including:

storing the small straight lines and the determined tilt parameter associated with each small straight line in a memory, and

sending the stored data to the fluid-jet apparatus.

23. The computer-readable medium of claim21, further including a step of controlling a tilt of the cutting head in accordance with the determined tilt parameter for each of small straight lines as the cutting head cuts the workpiece.

24. A fluid-jet cutting system, comprising:

a fluid-jet cutting head tiltable in response to a tilt parameter with respect to a plane of a material being cut;

a computer having a processor, a user interface, and a memory;

computer-executable instructions stored in the memory for automatically controlling a tilt of the cutting head relative to a material being cut to produce a target piece having an overall geometry, the instructions for performing steps comprising:

segmenting the overall geometry into small straight lines of approximately equal length;

receiving a speed for each of the small straight lines of the overall geometry, wherein at least two small straight lines are associated with different speeds;

automatically determining a tilt parameter for each small straight line in accordance with the speed for that small straight line; and

automatically controlling the motion of the cutting head in accordance with the automatically determined tilt parameter to cut the material to produce the target piece.

25. A fluid-jet cutting system, comprising:

a fluid-jet cutting head tiltable in response to a tilt parameter with respect to a plane of a workpiece;

a computer having a processor, a user interface, and a memory;

computer-executable instructions stored in the memory computer for performing steps comprising:

receiving a target piece shape to be cut by a cutting head of a fluid-jet apparatus from a workpiece;

describing an ordered path defining the target piece shape;

segmenting the path into small straight lines of approximately equal length;

determining a cutting-head translation speed relative to the workpiece for each of the small straight lines;

determining a tilt parameter of the cutting head with respect to the plane of the workpiece in response to the speed and a fluid jet-shape parameter for each of the small straight lines;

storing the small straight lines and the determined tilt parameter associated with each small straight line in a memory; and

controlling the tilt of the cutting head in accordance with the tilt parameter for each path segment as the cutting head cuts the workpiece into a shape approximating the workpiece shape.